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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,995	07/08/2003	Hitoshi Narusawa	1533.1001C	6240

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EXAMINER	
ENSEY, BRIAN	
ART UNIT	**PAPER NUMBER**
2643	

DATE MAILED: 03/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/613,995	NARUSAWA, HITOSHI	
	Examiner	Art Unit	
	Brian Ensey	2643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-7 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-7 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/662,336.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 12/02/03.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,674,868. Although the conflicting claims are not identical, they are not patentably distinct from each other because the hearing aids boost the frequency of the higher frequency range rather than the highest level, however the pending application does not utilize a second amplifier for frequency dependent gain amplification. It would have been obvious to one of ordinary skill in the art at the time of the invention that frequency dependent gain amplification can be achieved through the first amplifier in a multistage configuration.

Specification

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites the limitation "the digital audio signal" in lines 2 and 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 7 recites the limitation "the digital audio signal" in lines 2 and 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 7 recites the limitation "the second formant" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kandel. U.S. Patent No. 6,353,671.

Regarding claim 1, Kandel discloses a hearing aid for amplifying acoustic signals comprising: a circuit for detecting in real time a frequency band at the highest level of the acoustic signals that vary over time, and for generating a signal to raise a gain for signals of a higher frequency range than the detected frequency band at the highest level (112,113); and a first amplifier (114), in which the signal is inputted, for amplifying the acoustic signals by increasing the gain for signals of the higher frequency range than the frequency band, wherein frequency characteristics of the first amplifier are controlled depending on the detected frequency band (See Fig. 4 and col. 5, line 60 through col. 6, line5 and col. 8, lines 6-13). Kandel does not explicitly disclose a controller to provide the circuit functions. However, it is well-known in the art that a controller may describe a single device or a group of devices performing a desired function.

Claims 2 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kandel in view of Melanson et al. U.S. Patent No. 6,104,822.

Regarding claim 2, Kandel discloses a hearing aid for amplifying an acoustic signals, comprising: a circuit for detecting in real time a frequency band at the highest level of audio signals through frequency analysis of the audio signals that vary over time, and then for generating a control signal for raising a gain for signals of a higher frequency range than the

detected frequency band at the highest level, and then for amplifying the audio signals by increasing the gain for signals of the higher frequency range than the detected frequency band, according to the control signal (See Fig. 4 and col. 5, line 60 to col. 6, line 5 and col. 8, lines 6-13). Kandel does not explicitly disclose operating in a digital format. However, the use of digital circuitry to perform similar analog functions for space reduction and faster data processing is well known in the art and Melanson teaches an analog-to-digital processor converting an analog audio signal into a digital audio signal; a digital signal processor for processing one of a group of individual frequency band signals and gain coefficients to generate one of a plurality of processed frequency bands; and a digital-to-analog converter coupled to the digital signal processor and converting the digital audio signal into an analog audio signal. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the digital circuitry of Melanson to perform the same functions as the analog circuits of Kandel for space reduction and improved processing times.

Regarding claim 5, Kandel discloses a hearing aid, comprising: a circuit for detecting a first formant frequency in an audio signal and amplifying components of the audio signal having a frequency higher than the first formant responsive to the detection (See Fig. 4 and col. 5, line 60 to col. 6, line 5 and col. 8, lines 6-13). Kandel does not explicitly disclose operating in a digital format. However, the use of digital circuitry to perform similar analog functions for space reduction and faster data processing is well known in the art and Melanson teaches an analog-to-digital processor converting an analog audio signal into a digital audio signal; a digital signal processor for processing one of a group of individual frequency band signals and gain coefficients to generate one of a plurality of processed frequency bands; and a digital-to-analog

converter coupled to the digital signal processor and converting the digital audio signal into an analog audio signal. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the digital circuitry of Melanson to perform the same functions as the analog circuits of Kandel for space reduction and improved processing times.

Regarding claim 6, Kandel discloses a hearing aid processing method, comprising: detecting a first formant frequency in an audio signal; and amplifying components of the audio signal having a frequency higher than the first formant responsive to the detecting (See Fig. 4 and col. 5, line 60 to col. 6, line 5 and col. 8, lines 6-13). Kandel does not explicitly disclose operating in a digital format. However, the use of digital circuitry to perform similar analog functions for space reduction and faster data processing is well known in the art and Melanson teaches an analog-to-digital processor converting an analog audio signal into a digital audio signal; a digital signal processor for processing one of a group of individual frequency band signals and gain coefficients to generate one of a plurality of processed frequency bands; and a digital-to-analog converter coupled to the digital signal processor and converting the digital audio signal into an analog audio signal. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the digital circuitry of Melanson to perform the same functions as the analog circuits of Kandel for space reduction and improved processing times.

Regarding claim 7, Kandel discloses a hearing aid processing method, comprising: detecting a first formant frequency in an audio signal; and amplifying a second formant of the audio signal having a frequency higher than the first formant responsive to the detecting (See Fig. 4 and col. 5, line 60 to col. 6, line 5 and col. 8, lines 6-13). Kandel does not explicitly disclose operating in a digital format. However, the use of digital circuitry to perform similar

analog functions for space reduction and faster data processing is well known in the art and Melanson teaches an analog-to-digital processor converting an analog audio signal into a digital audio signal; a digital signal processor for processing one of a group of individual frequency band signals and gain coefficients to generate one of a plurality of processed frequency bands; and a digital-to-analog converter coupled to the digital signal processor and converting the digital audio signal into an analog audio signal. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the digital circuitry of Melanson to perform the same functions as the analog circuits of Kandel for space reduction and improved processing times.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kandel in view of Hori et al. U.S. Patent No. 4,739,511.

Regarding claim 3, Kandel discloses a hearing aid for amplifying an input acoustic signals that vary over time, comprising: a control circuit for detecting a first frequency band at the highest level of the input acoustic signals and for generating a control signal according to the detected first frequency band; and an amplifier for amplifying the input acoustic signals so as to generate an output acoustic signals (See Fig. 4 and col. 5, line 60 through col. 6, line5 and col. 8, lines 6-13). Kandel does not explicitly disclose the amplifier has a frequency characteristic including a first gain region which has a constant gain for frequencies equal to or lower than the detected first frequency band, and a second gain region whose gain increases higher than the first gain region, according to frequency, for frequencies higher than the detected first frequency band; and in response to the control signal, an increase point between the first and second gain regions changes according to the detected first frequency band. However, Hori teaches a hearing

aid in which characteristics in the low frequency zones are suppressed and the high frequency zone is emphasized by utilizing an amplifier including a first gain region which has a constant gain for frequencies equal to or lower than the detected first frequency band, and a second gain region whose gain increases higher than the first gain region, according to frequency, for frequencies higher than the detected first frequency band; and in response to the control signal, an increase point between the first and second gain regions changes according to the detected first frequency band (See Figs. 4-6 and col. 3, lines 37-64). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the variable gain control of Hori in the detection device of Kandel to clearly balance the level of the output frequencies.

Regarding claim 4, Kandel discloses a hearing aid, comprising: a detecting circuit for detecting in real time a first frequency band at the highest level of input acoustic signals that vary over time; and an amplifier for amplifying an input acoustic signals that vary over time and generating an output acoustic signals signals (See Fig. 4 and col. 5, line 60 through col. 6, line5 and col. 8, lines 6-13). Kandel does not explicitly disclose the amplifier has a frequency characteristic including a first gain region which has a constant gain for frequencies equal to or lower than the detected first frequency band, and a second gain region whose gain increases higher than the first gain region, according to frequency, for frequencies higher than the detected first frequency band; and in response to the control signal, an increase point between the first and second gain regions changes according to the detected first frequency band. However, Hori teaches a hearing aid in which characteristics in the low frequency zones are suppressed and the high frequency zone is emphasized by utilizing an amplifier including a first gain region which has a constant gain for frequencies equal to or lower than the detected first frequency band, and a

second gain region whose gain increases higher than the first gain region, according to frequency, for frequencies higher than the detected first frequency band; and in response to the control signal, an increase point between the first and second gain regions changes according to the detected first frequency band (See Figs. 4-6 and col. 3, lines 37-64). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the variable gain control of Hori in the detection device of Kandel to clearly balance the level of the output frequencies.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Ensey whose telephone number is 703-305-7363. The examiner can normally be reached on Mon-Fri: 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz can be reached on 703-305-4708. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Or faxed to:

(703) 872-9306, for formal communications intended for entry and for informal or draft communications, please label "PROPOSED" or "DRAFT".

Hand-delivered responses should be brought to: Customer Service Window, Randolph Building, 401 Dulany Street, Arlington, VA 22314

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BKE
March 16, 2005

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